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## Moving in the Metropolis : Smart City Solutions and the Urban Everyday Experience

Vihanninjoki, Vesa Johannes

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## **Moving in the Metropolis:**

### **Smart City Solutions and the Urban Everyday Experience**

**Sanna Lehtinen** (corresponding author)

University of Helsinki, Finland

sanna.t.lehtinen@helsinki.fi

**Vesa Vihanninjoki**

University of Helsinki, Finland

vesa.vihanninjoki@helsinki.fi

Sanna Lehtinen (PhD in Aesthetics, 2015, University of Helsinki) is a Postdoctoral Researcher at the Helsinki Institute of Sustainability Science HELSUS of the University of Helsinki. Her current research interests include developing philosophical approaches to urban aesthetics, philosophy of urban technologies and updating environmental aesthetics. She has collaborated with architects and urban planners and also teaches aesthetics at Aalto University, Helsinki. Lehtinen was a recipient of the Young Scholar Award by the International Association of Aesthetics (IAA) in 2013. She is an active member in the Philosophy of the City Research Group (PotC) and the President of the Finnish Society for Aesthetics.

Vesa Vihanninjoki (MA in Aesthetics, 2015, University of Helsinki) is a salaried Doctoral Candidate at the University of Helsinki. His doctoral research examines the role that aesthetics plays both in urban everyday life and in the diverse forms of present-day urban development. The emphasis is on the questions of sustainable urban infill and a revised notion of urban place, combining the relative stability of the material environment and the dynamism inherent in all experience. With an academic background that also covers various fields of technology (e.g. civil engineering and urban planning), Vihanninjoki aims at providing a multidisciplinary approach to urban aesthetics.

## **Abstract**

### **Moving in the Metropolis: Smart City Solutions and the Urban Everyday Experience**

The omnipresence of technology in cities has had an undeniable effect on the urban everyday experience. This experience is increasingly structured by technological objects or constellations of converged technologies. Activities in a city affect how and what technologies are developed but these new and emerging technologies also have an inevitable effect on what is perceived to be the possible sphere of action. The aim of this article is to interpret and understand some of the ways in which new technologies are changing – and have already changed – the way we experience the city. The focus is on those elements of everyday experience that have a clear relation to how the city is experienced aesthetically, through its technological representations or in more direct contact with the physical environment. We set out to examine what type of consequences technological change has regarding the perceptual and interpretative skills that are needed when moving in the urban environment. Of course, we recognize that technology has already profoundly changed the way people come into contact with urban environments. However, there is a shift within the experiential sphere that has not been described thoroughly enough. The implementation of many smart city solutions is affecting urban dwellers and their engagement with the everyday urban environment. Urban aesthetics in its philosophical and applied forms offers perspectives on how and to what extent technologies mediate experiences in the urban sphere. Emphasis is put on understanding and evaluating urban technologies and their role in the constitution of everyday experience by introducing the phenomenological concept of urban lifeworld. We illustrate the theoretical discussion with examples such as contemporary navigation technologies and the metro as a complex technological system. The focus is on the implications of their use on the aesthetic experience and evaluation of urban environments.

**Keywords:** urban aesthetics, everyday aesthetics, urban experience, smart city, urban technologies, urban mobility

## Introduction

Urban environments all over the world are becoming saturated with a variety of technologies, giving rise to a whole range of unforeseen possibilities and challenges. Proponents of smart city thinking emphasise the increase in practicality, safety and efficiency that new technologies bring about, perhaps understating the complex questions of values and meanings involved. Technologies are, however, never mere neutral means to an end, but they make the world appear to us in certain ways, and often technologies allow us to conceive a particular end as an end in the first place. Promoting “smartness” also means defining the city and the urban lifeform anew. Traditionally cities have been regarded as cultural “melting pots” manifesting diversity. Accordingly, the multitude of urban experiences has been conceived as a major source of value. The adoption of a new technological tool, such as mobile navigation or a route-planning system might provide some information about how changes in experiencing various urban values start taking place. In order to analyse the experiential change, the focus should be on the actual everyday experience instead of an idealised experience which by necessity directs the development of new technologies. Developing new technology relies on speculation and creating scenarios, as it requires imagining how it will ultimately change the everyday experience of urban dwellers.<sup>1</sup> However, the realm of the everyday experience in the urban environment is marked by unanticipated moments and irregularities to the extent that the actual effects on everyday experience are very difficult to assess in advance.<sup>2</sup>

In this chapter we take a look at how technological change in urban environments can be understood through current developments in philosophical urban aesthetics. The aim more precisely is to describe how the technology-induced processes within the experiential sphere are affecting urbanites and their relationship with the city in which they live their everyday lives. The main case study comes from urban mobility: we show how the urban experience is essentially affected by

more established rail-based infrastructure systems – such as the metro – as well as by more contemporary representations of urban transportation by portable wayfinding technologies.

### **Smart Urban Aesthetics?**

In order to get an overall picture of the urban experience that contemporary cities give rise to, it is necessary to focus on how technology contributes to it. The everyday experience of increasingly smartening cities consists of technological solutions that function in ways that go well beyond the perceptual capacities of regular urban dwellers. Interconnected technologies have already been proven to change the way urban environments are used and experienced.<sup>3</sup> It is possible to acquire a firmer grasp of this theme through urban aesthetics, a recent strand of philosophical aesthetics. When it is introduced into the discussion on urban technologies, it is easier to conceptualise the various ways they affect the experience and use of contemporary cities.

There is still a common misunderstanding that philosophical and applied aesthetics concern only the visual appearance of different types of phenomena, most notably those within the sphere of art. However, aesthetic concerns are equally present in understanding multisensory, embodied and otherwise more engaged levels of different types of experience. This more comprehensive notion of aesthetics as a field of interest offers a chance to delve deeper into the experiences that are constituted by the urban lifeform itself. Philosophical and applied aesthetics is thus also a relevant approach for studying the experiential repercussions that result through the implementation of different types of new and emerging technologies. Urban aesthetics, in this sense, is not only a tool for evaluating the visual cues or formal qualities of a city, but it provides an overall framework for discerning and evaluating the qualitative changes that technologies set in motion in the urban environment.

The look and feel of cities affect their inhabitants in various ways. It is thus necessary to assess the aesthetic factors that are formative in the urban lifeworld.<sup>4</sup> Philosophical urban aesthetics

is used here as a framework for assessing both *what* the material conditions of the urban experience are and *how* human experience processes these conditions and is also formed by them. The effect on the sphere of human action is also of interest: how the city as a technologically organised structure conditions the scale of possible behaviours and activities. This way of understanding aesthetics in relation to the urban experience is also intertwined with selected approaches from everyday aesthetics: the urban lifeworld comprises coming into contact with different components (e.g. material, social and symbolic) of an urban environment mostly in the context of the *everyday*.

The everyday is “an essentially contested concept”, but it also helps to distinguish how different functions of cities have been planned according to traditional planning paradigms.<sup>5</sup> The concept of the everyday is thus central when discussing how cities are used and experienced: “The everyday attitude is coloured with routines, familiarity, continuity, normalcy, habits, the slow process of acclimatisation, even superficiality and a sort of half-consciousness”.<sup>6</sup> Many elements of urban environments “make sense” only when mirrored by how they become used in the context of the everyday. It would even be impossible to think about these elements without the dimension of everyday life. For example, the intended temporal rhythms of the city and the locations for different types of functions result from this.

Different technologies and how they are implemented have a shaping effect on how the everyday experience will take form. It is thus difficult to separate the role of technology from the very goals that one has within one’s everyday life. New technologies, when successfully adopted, merge with older, previously existing ways of acting and thinking. Technologies that are implemented within already existing structures and uses of the urban environment reinforce and realign those experiences that are based on existing networks of affordances.<sup>7</sup> New technologies are thus very rarely adopted in an experiential vacuum, but their use is by necessity affected by already existing practices.

## **The Experiential Effects of Smart City Solutions**

The intertwining of experiential layers affects and constitutes the currently prevailing conditions of the urban lifeworld. These layers are essentially related to the physical features of objects in the environment, but they are also more or less mediated by the used technologies. GPS and location-based mobile applications are one good example of this. Many uses of these technologies are also based on the material features of the built environment. These include built spaces and other natural or human-made objects that form the cityscape. Navigation technologies make relations of these perceivable elements visible and create new, advanced forms, eschewing more archaic wayfinding practices. It is worth paying attention to the fact that the habitual use of mobile applications brings forth other layers of experience: creative and strategic variations in the use of the city or the layers of memories and imagination related to familiar places are examples of this.

The experiential analysis of urban technologies begins by recognising the fundamental role that various practices and routines have in the constitution of the urban everyday experience. This type of thinking relies on the Heideggerian approach to the human condition as the “focal point” of countless functional – or, to be exact, equipmental – relations between human beings and their environment.<sup>8</sup> It is crucial to note that the “essence” of various technological “things” – their functionality or equipmentality – can never be completely understood via a traditional, instrumental view of technology, according to which technologies are basically neutral connectors between pre-defined (subjective) intentions and verifiable (objective) causal effects. In short, such instrumentalism states that technologies are mere means-to-an-end.

A postphenomenological philosophy of technology<sup>9</sup> points towards how technologies essentially open up and make comprehensible new possibilities of use and action. These particular uses and actions, in turn, give rise to new ways of experiencing reality and our position in it. Without the concrete technology of, say, a smartphone, we could not conceive all the possibilities – and the responsibilities – that such a device might bring forth: only with the aid of such technology

is one able to send e-mails effortlessly on the go, and only with the aid of such technology is one supposed to be reachable by e-mail almost around the clock. Our everyday experience is thus essentially mediated or structured by the technologies we make use of, and it is often the various technologies that we rely on that allow us to conceive our pursued ends *as* ends in the first place.

How new urban technologies are adopted affects several functions of the city at the same time. The gravity of these effects is dependent on what is considered to be the normalised and, on the other hand, the aspired technological level of a particular city. New technologies also raise new questions regarding the status of the elements that are most affected by the implementation of these technologies. Conservative versus techno-optimist approaches have an influence on whether and to what extent the existing features of the urban environment should or could be changed. Traditionalist perspectives range from emphasising the “precious quality of human continuity” to the extremity of preserving urban environments for the sake of their museum value.<sup>10</sup> Smart city and innovation emphasise assessing the old through its relation to that which is new or emerging. Interestingly, both of these value discourses tend to be rather limited in the way they focus on some strong interpretation of the current situation and thus neglect the potentiality of the environment: to put it in a pointed way, the conservation perspective is overly suspicious of change, whereas the futurist perspective idealises change led by new and emerging technologies.

If technology is seen as an agent of change in the context of urban environments, technological development or increasing technologization could be understood to drive a “culture of change” even more widely. The desired smoothness of the everyday urban experience is subject to variation in quantity and quality, depending on the quality and quantity of technological mediation. This development is driven further by multiple overlapping and interlaced technologies. Traditional objects in the urban environment are by no means fixed either, yet technologies have expanded the range and amount of these changes and objects significantly.



## Technology-induced Mobility and the Continuity of Urban Experiences

### *i. Contemporary Wayfinding Tools: Increased Freedom of Movement or Spatial Illiteracy?*

In a contemporary city, moving between places is a complex and technologically mediated everyday necessity. Thinking of change and innovations, it is interesting to examine how the emergence of new technologies gives rise to certain unforeseen, movement-related environmental affordances and promotes them, but at the same time may displace or erode some existing ones. For example, the GPS-based navigation applications that enable us to find our way and move freely without the fear of getting lost both in familiar and strange urban environments have already significantly changed our relationship to our surroundings and how we move within them. Finding one's way is easier than ever, as almost everyone has access to a localisable smartphone. Most often these devices are carried along all the time when moving in the city. Hence, the easy and common access to navigation applications provides an average urbanite with a new level of sense of security. It is possible to "get lost safely" occasionally, as one can check one's whereabouts from the application when needed.

The recent rise of technological navigation aids has opened up numerous new environmental affordances, as previously out-of-reach places are now made more effortlessly and safely accessible. In a way, technology has democratised an average urbanite's relation to the city, as people are not so bound to the local neighbourhoods they happen to inhabit. Besides this, the triumph of navigation applications has had a remarkable effect on which environmental affordances are actually utilised.

The way people make use of affordances in the course of their everyday life, in turn, essentially affects or even defines their experience of the environment. In other words, as people learn to utilise certain affordances, they learn to perceive the environment according to these particular potential uses and actions: people see what they have learned to look for. These mechanisms of habituation operate automatically, without much reflection. As Erik Rietveld and

Julian Kiverstein put it: “What the skilled person has learned to do over the years feeds back into the way the meaningful world appears to her *in perception*”.<sup>11</sup>

Navigation applications are effectively transforming the way we perceive and interpret our environment – they change our experiential relationship to our surroundings. This means that the applications alter the way we distribute our attention and make sense of the environment by constructing various “mental maps” in order to orientate. They even make us “blind” to many such environmental qualities and properties that we would otherwise notice and pay attention to. As Henry Grabar has pointed out: “With their small screens and egocentric perspectives, mobile navigation systems function like blinders, reducing the landscape to the width of a street. They narrow the world.”<sup>12</sup>

Similarly, as people are able to learn new skills, they are able to forget their existing ones. It may be that due to recent wayfinding applications, more traditional navigation skills become useless. If such skills are no longer needed, they will slowly but surely diminish, changing effectively the way we conceive our environment. This tendency has already been verified empirically, and the outcomes of the research may even appear to be of concern: “users of navigation tools have poorer memory of surrounding scenes and less accurate configurational knowledge of travelled routes, compared with people who use maps or directly experience the routes.”<sup>13</sup>

This has evident implications for the possibility of experiencing the city aesthetically, for the aesthetic judgement of an urban environment by and large relies on perceiving, interpreting, as well as memorising and remembering certain concrete features that make the surroundings distinguishable and identifiable. It is exactly these kinds of features that comprise the *character* and the idiosyncratic *experiential quality* of a local environment. If one has no memorable conception of the look and the feel of a particular environment – due to the fact that one has worn “blinders” – this means that the related urban aesthetic values are practically ignored. The “narrowed world” is

thus essentially poorer, judged from an aesthetic point of view. Moreover, if traditional navigation skills become obsolete, it has remarkable implications for a whole branch of urban design that has focused precisely on the questions of *legibility* and *continuity* in cities.<sup>14</sup> If cities no longer have to be designed to be legible and experientially continuous, this will most likely affect the general requirements for *understandability* of the cities quite drastically.

More analysis is needed in order to tackle some questions of contingency. It would be of interest to know, for example, in which ways people actually end up using the navigation applications. These new wayfinding tools can be mere introductory “early stage” tools when one is trying to make sense of a new environment. Or, they might also be used on a more regular basis even in familiar surroundings. The detailed answers to these questions define the depth of environmental relationship in terms of bodily engagement, which ultimately forms the basis for prominent types of urban aesthetic experience.

Despite the fact that the emergence of specific technologies – such as mobile wayfinding applications – may pose challenges to our possibility of experiencing the aesthetic values and meanings of our urban environments in their full richness, they also open up various new and uncharted ways of using and experiencing everyday surroundings. Such unforeseen environmental affordances are likely to involve remarkable aesthetic potentialities, so that their realisation may notably improve the quality of our urban experience.

For example, the increased freedom of movement and the possibility of “getting lost safely” may provide us with a new kind of aesthetic sensitivity or openness to aesthetic potentialities inherent in urban environments. When one does not continuously have to locate oneself on the basis of various environmental cues, one is able to approach the urban landscape and its elements with increased attention. This, in turn, may help one to discover and also create new urban aesthetic values – both at the level of detail, and in terms of conceiving the city as a complex systemic whole.

## *ii. Rail-based Public Transportation: From Commuting to Exploring?*

The general level dynamics regarding the potential and actual environmental affordances – and their “experiential correlates” – is not bound merely to present-day mobile technologies:

postphenomenological analysis is also applicable to more tangible and established technologies and technology-laden urban infrastructures. It is possible to ask, for example, how the emergence of public transportation systems – such as the metro and other rail-based solutions – has shaped the way urban environments are conceived at a more abstract level, as well as how they are experienced more concretely in the course of quotidian life.

In general, mass rapid transit systems have remarkably transformed the relations of space and time, redefining the connections between different places and changing the prevailing conceptions and experiences of distance.<sup>15</sup> Among the widespread and far-reaching economic and societal implications, such transportation systems are groundbreaking in providing urbanites with the possibility of commuting. No longer do people have to work only in the immediate vicinity of their housing neighbourhoods, but they can access previously out-of-reach areas relatively easily – or at least in a reasonable amount of time.

The rise of rail-based mass rapid transit has had a remarkable effect on conceiving the city increasingly as a system of dynamic flows, instead of a system of static objects.<sup>16</sup> At the level of urban experience such an evolution has given rise to a totally new kind of lived urban reality: the everyday of a “commuting working power.”<sup>17</sup> Being a part of commuting working power means being a part of a pulsating, fluctuating and never-resting city that has certain machine-like characteristics. Grahame Shane describes the specific function that urban railways have in the constitution of the “city machine” of New York as follows: “In New York the construction of Grand Central Station represented the embodiment of [...] machine-age and futurist’s dreams. [...] It was a multi-layered microcosm of the larger City Machine of mass consumption and production.”<sup>18</sup> As Peter Madsen has pointed out, railway-related urban constructs such as Grand Central Station

are not only important functioning parts of the “machine”, but they also have a crucial role in structuring the mundane *experience* of the “machine”: Grand Central Station is “not only organising the everyday, but it is also organising the *understanding* of the everyday.”<sup>19</sup>

Following an objective logic and technological rationality of its own, a “city machine” and its concrete representatives may engender experiences of vastness, anonymity and radical otherness that may be considered either positive, pleasant and thus desirable, or negative, unpleasant and thus undesirable. This kind of ambivalence also characterises the experience of *the sublime* – combining elements of both terror and awe, “mingling exhilaration with a threat to selfhood”<sup>20</sup> – that comprises a classic subject of study in philosophical aesthetics. David Nye has called this particular experience “technological sublime”<sup>21</sup>: “a new aesthetics of the industrial sublime [that] presented urban space as having the same awe-inspiring and uplifting qualities that in the eighteenth century had been attributed to natural phenomena such as mountains and spectacular sites such as Niagara Falls.”<sup>22</sup> Certain urban sublime experiences are to be viewed essentially as technology-induced: they cannot be understood thoroughly without paying substantial attention to the concrete technological solutions that shape everyday life. The approach of a postphenomenological philosophy of technology thus also gives rise to a new materially-oriented perspective on the essence of a modern city that is often “explained” with a rather ambiguous metaphor of a machine.

As well as having experiential repercussions at a general level, the emergence of the metro and other urban railway systems has had a remarkable effect on how the city and its *spatial relations* are conceived in the course of everyday life. For example, the structure of a typical rail-based system forces us to think of the city as a network of interconnected nodes and hubs: certain places are more connected to other places and thus more accessible, while some other places remain peripheral. Accordingly, the environs of a station automatically gain central status, whereas the areas between the stations tend to be of less importance. This can be verified easily by examining property prices and the locations of various services.

Although the ability to move between places *in person* comprises only one form of connectedness<sup>23</sup>, the described paradigm of mobility is also characteristic of present-day “smart” urbanism – not merely its modern interpretation that emphasises the essence of a city as a system of monitorable and manipulable flows. Mobility itself may gain completely new forms as it becomes represented and visualised in an unforeseen way in the “era of smartness”. Such a transformation takes place by the aid of new technologies and applications such as GPS-based route planners that effectively combine the features of traditional wayfinding services with real-time information about traffic flows – even down to the level of a single identifiable vehicle. This may give rise to new possibilities of exploring and experiencing the metropolis, especially if other factors than mere quantifiable travel time become embedded in the algorithms. One can imagine an application in which, instead of choosing just the “preferred transport mode” and the “amount of walking”, one could preference quiet, green, interesting or beautiful routes.

## Conclusions

Experiential factors are proving to be increasingly important in understanding what types of urban environments enable people to flourish and enjoy genuine well-being. The experiential consequences of technological change in the urban environment necessarily affect the lived relation with the city. A portable, always online, navigator encourages one to get lost safely, knowing that information about the exact location in a city can be retrieved at any moment. While there is no acute necessity to observe the environment solely for navigation purposes, the aesthetic qualities of the environment become more prominent and they are potentially observed with more conscious attention. Also the subtle nuances in the characteristics of the city are thus more readily paid attention to. Even features that are characteristic of *urbanity* itself can be observed more freely.

In a way, this also applies to other technologies and technology-laden urban infrastructures, as the new wayfinding-related applications open up unforeseen ways of experiencing them. The two

technology-induced modes of experience described in this chapter through case examples are, indeed, deeply intertwined and interconnected. The metro system is a large, complex system developed over an interpretation of the city and an estimation of its most efficient use. The more recent layer of the navigation system is based on the transportation system and based on yet another estimation of how the system becomes used. This interconnectedness makes the two systems merge and converge in experience, and they bring forth the experience of the city as a complex system. One key characteristic of complex urban form is the perceptual inexhaustibility of a city: there is always more to a city than can be observed or experienced from the vantage point of one person. It is fair to state that “in some respects the city remains a perpetual mystery, just as great art remains a mystery – extending beyond our capabilities”.<sup>24</sup> Smart city solutions rearrange our relation to the existing urban technologies and thus augment the human capabilities for certain types of experience, while suppressing other types of experience.

From the perspective of a philosophical approach to urban aesthetics, it is an interesting question as to whether new urban technologies expand or limit the possibilities of experience and action within the sphere of quotidian life. The experiential effects of so-called smart city development depend on whether and in which cases technology becomes an intensifying “booster” or an inhibiting “filter” for different types of experience: this would have to be studied further in different contexts.

In this article, we have been building a general theoretical framework for this type of further work by bringing philosophical and applied urban aesthetics together with a postphenomenological analysis of urban technologies. The focus in our examples has been on urban wayfinding practices that use and apply the latest technologies. These new practices have been mirrored in the radical change in the urban experience caused by the metro system, which is a complex technological system in itself. Focusing on the analysis of the aesthetically mediated urban experience emphasises that urban life as such requires many perceptual and interpretative skills that are based on a

complex network of environmental affordances and learned in practice in the course of living one's everyday life.

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<sup>1</sup> See e.g. Sanna Lehtinen and Vesa Vihanninjoki, "Aesthetic Perspectives on Urban Technologies: Conceptualizing and Evaluating the Technology-Driven Changes in the Urban Everyday Experience," in *Technology and the City: Towards a Philosophy of Urban Technologies*, ed. M. Nagenborg, M. González Woge, T. Stone, & P. Vermaas (Switzerland: Springer, 2019)

<sup>2</sup> Ossi Naukkarinen, "What Is 'Everyday' in Everyday Aesthetics?," *Contemporary Aesthetics* 11 (2013).

<sup>3</sup> See e.g. Toru Ishikawa, "Maps in the Head and Tools in the Hand: Wayfinding and Navigation in a Spatially Enabled Society," in *Community Wayfinding. Pathways to Understanding*, ed. R. H. Hunter, L. A. Anderson, & B. L. Belza (Switzerland: Springer, 2016).

<sup>4</sup> Peter Madsen and Richard Plunz, eds., *The Urban Lifeworld: Formation, Perception, Representation* (London & New York: Routledge, 2002).

<sup>5</sup> Yuriko Saito, *Aesthetics of the Familiar: Everyday Life and World-Making* (Oxford: Oxford University Press, 2017).

<sup>6</sup> Naukkarinen, "What Is 'Everyday'".

<sup>7</sup> See e.g. James J. Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton-Mifflin, 1979).

<sup>8</sup> Martin Heidegger, *Being and Time* [1927], trans. John Macquarrie and Edward Robinson (Oxford: Basil Blackwell, 1978).

<sup>9</sup> See e.g. Don Ihde, *Technology and the Lifeworld* (Bloomington: Indiana University Press, 1990); *Postphenomenology* (Evanston: Northwestern University Press, 1993); *Heidegger's Technologies. Postphenomenological Perspectives* (New York: Fordham University Press, 2010); Peter-Paul Verbeek, *What Things Do. Philosophical Reflections on Technology, Agency, and Design* (University Park, PA: Pennsylvania State University Press, 2005).

<sup>10</sup> Arnold Berleant, "Cultivating an Urban Aesthetic," in *The Aesthetics of Human Environments*, ed. Arnold Berleant and Allen Carlson (Toronto: Broadview, 2007), 81.

<sup>11</sup> Erik Rietveld and Julian Kiverstein, "A Rich Landscape of Affordances," *Ecological Psychology*, 26, no. 4 (2014): 341. Emphasis added.

<sup>12</sup> Henry Grabar, "Smartphones and the Uncertain Future of 'Spatial Thinking'," Citylab, <https://www.citylab.com/life/2014/09/smartphones-and-the-uncertain-future-of-spatial-thinking/379796/> (accessed September 15, 2018).

<sup>13</sup> Toru Ishikawa, "Maps in the Head and Tools in the Hand."

<sup>14</sup> See e.g. Michael R. King and Elise de Jong, "Legibility and Continuity in the Built Environment," in *Community Wayfinding: Pathways to Understanding*, ed. R. H. Hunter, L. A. Anderson, & B. L. Belza (Switzerland: Springer, 2016).

<sup>15</sup> For a more thorough account of the role that railways have had in the development of (European) Cities as well as in changing the conceptions of what a city is or could be, see e.g. Ralf Roth and Marie-Noëlle Polino, eds., *The City and the Railway in Europe* (Aldershot: Ashgate, 2003).

<sup>16</sup> See e.g. Antoine Picon, "Urban Infrastructure, Imagination and Politics: from the Networked Metropolis to the Smart City," *International Journal of Urban and Regional Research* 42, no. 2 (2018): 263–275.

<sup>17</sup> Peter Madsen, introduction in *The Urban Lifeworld: Formation, Perception, Representation*, 38.

<sup>18</sup> Grahame Shane, "The Machine in the City," in *The Urban Lifeworld: Formation, Perception, Representation*, 227–228.

<sup>19</sup> Peter Madsen, introduction in *The Urban Lifeworld*, 38. Emphasis added.

<sup>20</sup> Christophe Den Tandt, "Masses, Forces, and the Urban Sublime," in *The Cambridge Companion to the City in Literature*, edited by Kevin R. McNamara (Cambridge: Cambridge University Press, 2014).

<sup>21</sup> David Nye, *American Technological Sublime* (Cambridge: The MIT Press, 1994).

<sup>22</sup> David Nye, "The Sublime and the Skyline," in *The American Skyscraper*, ed. Roberta Moudry (Cambridge: Cambridge University Press, 2005).

<sup>23</sup> See e.g. Philip Brey, "Space-Shaping Technologies and the Geographical Disembedding of Place," in *Philosophy and Geography III: Philosophies of Place*, ed. Andrew Light and Jonathan M. Smith (Lanham: Rowman & Littlefield, 1998).

<sup>24</sup> Arto Haapala, "The Urban Identity. The City as a Place to Dwell," in *Place and Location III*, ed. Virve Sarapik and Kadri Tüür (Tallinn: Estonian Academy of Arts, 2003), 21.



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